

BARBIDRILUS PAUCISETUS, NEW GENUS,
NEW SPECIES (OLIGOCHAETA: ENCHYTRAEIDAE),
FROM EASTERN NORTH AMERICA

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Abstract.—*Barbidrilus paucisetus*, a new genus and species of freshwater enchytraeid oligochaete was collected from the Apalachicola River, Florida. Specimens identical in setal morphology and placement have been collected from North Carolina and Ohio. The new species is unusual in that the setae are present only in the ventral setal bundles of segments II and III. Straight, anteriorly directed setae, elongate spermathecal ducts, and compact penial bulbs are characteristic.

Investigations of North American Enchytraeidae have lagged considerably behind the work on this group by specialists in Europe, Asia, and South America. Likely synonyms of several of the species, lost type-specimens, and species transferred to other genera have hindered identifications of terrestrial and freshwater species and resulted in few North American investigators willing to study enchytraeids. Tynen's (1975) checklist of species known to occur in North America has provided a much-needed impetus for additional work on this group of oligochaetes.

We believe this to be the first twentieth-century description of a possibly endemic North American genus.

Although most descriptions of enchytraeid species have been based on living material, the specimens we examined were, unfortunately, received in a preserved state. This was of some disadvantage in distinguishing such structures as the nephridia, but because of the large numbers of specimens received, we were able to observe most of the other taxonomically important features of the specimens. Some of the specimens had been stained with a red dye which facilitated observations of internal structures.

Barbidrilus, new genus

Etymology.—“*barba*,” L. “beard”; “*drilos*,” “worm”; in reference to the anterior ventral placement of elongate setae.

Diagnosis.—Setae long, straight, without nodulus, restricted to anterior ventral bundles. Head pore at 0/I. Sorsal pores absent. Esophageal-intestinal transition gradual, no esophageal or intestinal diverticula. Dorsal vessel arising anterior to clitellum. Three pairs of primary septal glands; secondary septal glands absent. Sperm sac present. Sperm ducts long, narrow; penial

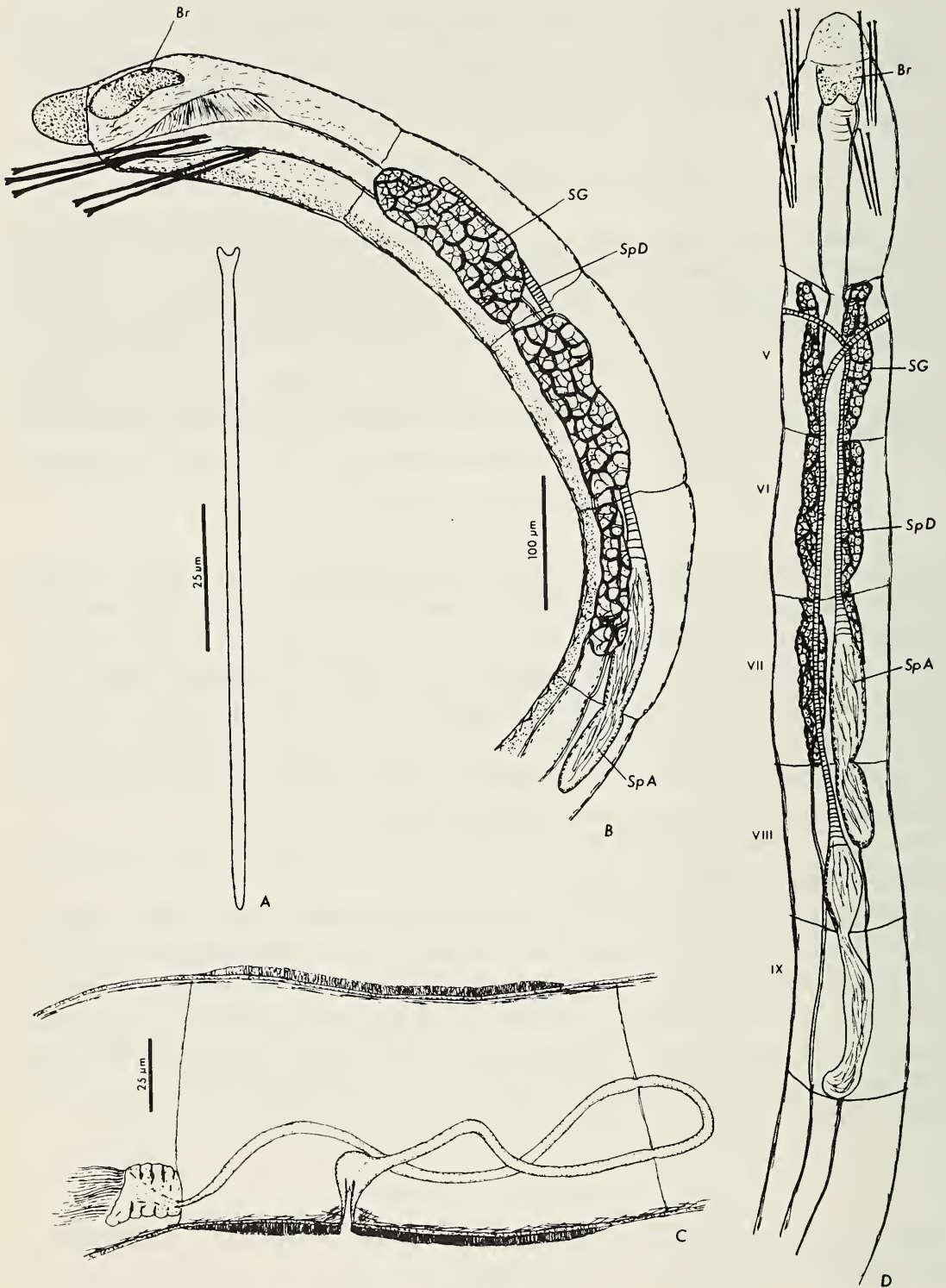


Fig. 1. *Barbidrilus paucisetus*. A, seta; B, lateral aspect of anterior end; C, male duct; D, semidiagrammatic dorsal aspect of anterior end. Br, brain; SG, septal gland; SpA, spermathecal ampulla; SpD, spermathecal duct.

bulbs compact. Ovisac present. Spermathecal ampullae sac-like, not communicating with esophagus; duct long, without associated glands.

Type-species.—The following new species:

Barbidrilus paucisetus, new species

Fig. 1

Etymology.—"paucus," L. "few"; referring to the reduction in setal number.

Holotype.—NMNH 60006. Florida: Apalachicola River. River Mile 87.5. 15 December 1978. B. Pruitt, Jr.

Paratypes.—Same location and date, 10 specimens (NMNH 60007–60016). Florida: Apalachicola River, River Mile 67.6, 14 December 1978, B. Pruitt, Jr., 9 specimens (LSU 3070).

Description.—Length 5–9 mm; width 0.08–0.14 mm. Up to 50 segments. Prostomium rounded, conical, as long as width at peristomial junction. Head pore indistinct, at 0/I; dorsal pores absent. Setae 2–3 per bundle, only in ventral bundles of II and III. Setae long, straight, without nodulus, directed anteroventrally; tips with rounded bifurcations. Setal follicles absent from other segments. Brain as long as wide, incised posteriorly. Esophageal-intestinal transition gradual, no intestinal or esophageal diverticula. Chlorogogue cells sparse, beginning in V. Primary septal glands paired, in V, VI, and VII, varied in pattern, but not united dorsally or ventrally. First 4 segments aseptate. Nephridia present, but characters unobservable in fixed specimens. Peptonephridia present, paired. Clitellum extending XI/XII–XII/XIII with large, closely associated gland cells.

Sperm funnels cylindrical, as long as wide, collar of same diameter as funnel. Sperm duct long, narrow, extending posteriorly as far as XIV. Penial bulb compact, bulbous. Spermathecal pores lateral in V. Spermathecal ducts long, without glands, extending posteriorly to VII or VIII. Spermathecal ampullae thin-walled, sac-like, elongate, free in body cavity, located as far posteriorly as septum IX/X. Spermatozoa in lumen of ampulla, not organized into aggregations.

Discussion.—*Barbidrilus paucisetus* is unique among the Oligochaeta in the placement, relative shape, and orientation of the setae.

A reduction in setae such as occurs in *B. paucisetus* is found in two other enchytraeid genera. In *Marionina achaeta* Lasserre, 1964, setae are absent from all segments; in *M. preclitellochaeta* Nielsen and Christensen, 1963, setae are present only in the ventral bundles of segments II through VI. Setae are completely absent in all known species of *Achaeta*.

Barbidrilus paucisetus differs from *Marionina* species because of several features. Spermathecae in species of *Marionina* are generally spherical to ovoid; ampullae usually communicate with the esophagus, and the ducts are

mostly confined to segment V with glands associated with either the spermathecal pores or ducts. In *B. paucisetus* the spermathecal ampullae are elongate, sac-like, and free from the gut. There are no gland cells associated with either the ducts or the spermathecal pores, and the spermathecae may extend posteriorly to segment IX.

It is perhaps to species of *Achaeta* that *B. paucisetus* is most closely related. Several species of *Achaeta* (e.g. *A. danica* Nielsen and Christensen, 1959) have elongate spermathecal ducts. The dorsal vessel of all species of *Achaeta* arises in the anteclytellar region, and all lack setae. While most species of *Achaeta* have setal follicles in the position of the missing setal bundles, others (e.g. *A. camerani* (Cognetti, 1889), *A. iridescens* Christoffersen, 1979, *A. littoralis* Lasserre, 1967) share with *B. paucisetus* a lack of them.

Differences between *Achaeta* and *Barbidrilus* include the esophageal-intestinal transition (abrupt in *Achaeta*, gradual in *Barbidrilus*), presence of an ovisac in *Barbidrilus* and an absence in *Achaeta*, location of the head pore (0 in *Achaeta*, 0/I in *Barbidrilus*), and the shape of the penial bulb (subdivided to form gland-like structures in *Achaeta*, compact and pear-shaped in *Barbidrilus*).

Barbidrilus paucisetus is known only from freshwater habitats; it has been collected from rivers at locations where fine silt overlies sand. While the type-locality is Florida, specimens with setae that were identical in shape and position to those of *B. paucisetus* have been collected from the South River, North Carolina, and from Sandusky Bay, Ohio.

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Literature Cited

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